Faculty is required to have the outline submitted to the Academic Affairs Office. The course outline is the form used for approval of new courses by the Academic Affairs and Standards Council.

DEPT. _____ INDT _____ COURSE NUMBER: _____ 1102 _____

NUMBER OF CREDITS: 2

COURSE TITLE: Mechanical Power Transmission

CATALOG DESCRIPTION: Introduces students to fundamental industrial mechanical concepts, principles, and equipment.

AUDIENCE: Mechatronics students

FULFILLS MN TRANSFER CURRICULUM AREA(S) *(Leave blank if not applicable)*
Area: by meeting the following competencies:
Area: by meeting the following competencies:
Area: by meeting the following competencies:

PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE: MATH0098 and STSK0095 or equivalent test scores

LENGTH OF COURSE : 2 credits (1 lect., 1 lab)

THIS COURSE IS USUALLY OFFERED:
Every other year ☐ fall ☐ spring ☑ summer ☐ undetermined ☐

Four goals are emphasized in course at Minnesota West Community & Technical College:

1) ACADEMIC CONTENT: This course will help students achieve basic knowledge of:
   a. Shop safety
   b. Lubrication
   c. Mechanical drive systems and components
   d. Precision measurement

2) THINKING SKILLS: This course will help students improve the effectiveness of their thinking skills through:
   a. Completing homework (reading, reports, and worksheets)
b. Participating in classroom discussions
c. Taking open and closed book quizzes and tests
d. Complete assigned lab projects

3) COMMUNICATIONS SKILLS: This course will help students improve their oral and written communication skills through:
   a. Participating in class discussions and reports
   b. Participating in assignments, worksheets, and reports

4) HUMAN DIVERSITY: This course will help students recognize, understand, and appreciate human diversity through:
   a. Participating in classroom discussions
   b. Working with other students on labs
   c. Working with students from other cultures

TOPICS TO BE COVERED:
1. Shop safety
2. Precision measurement
3. Print reading
4. Tools
5. Rigging/Lifting
6. Lubrication
7. Bearings
8. Flexible belt drives
9. Chain drives
10. Mechanical drives
11. Vibration
12. Alignment
13. Preventive Maintenance

COURSE LEARNING OUTCOMES (GENERAL):
   a. Demonstrate good shop safety practices
   b. Identify proper equipment lubrication
   c. Design and test functions of various types of mechanical drive systems and components
   d. Perform shaft alignments using precision measurement tools

STUDENT LEARNING OUTCOMES (SPECIFIC):
1. Recognize a safe work environment and the need for personal safety
2. Demonstrate proper use of various measuring tools
3. Demonstrate knowledge and proper use of various hand tools
4. Identify the function and types of lubricants  
5. Define viscosity as it relates to lubrication  
6. Describe the components of a lubrication program  
7. Identify functions of a bearing  
8. Compare the differences between radial and axial loads  
9. List and describe common types of bearings  
10. Identify common causes of bearing failure  
11. List factors to consider when installing bearings  
12. Identify common types of belts used for flexible belt drives  
13. List and describe the characteristics of V-belts and timing belts  
14. Identify considerations for proper belt alignment and tension  
15. Identify common belt drive safety guidelines  
16. Identify common types of chain drives  
17. Identify considerations for proper alignment for chain drives  
18. Describe the function of mechanical drives  
19. Calculate forms of energy produced by mechanical drives  
20. Calculate gear speed for gears found in a mechanical drive  
21. List and describe common tooth forms and gear terminology  
22. Demonstrate how to measure backlash  
23. Identify common gear types  
24. Describe common types of gear wear  
25. Identify major causes of machine vibration  
26. List and describe terms used in vibration analysis  
27. List and describe common means of vibration measurement  
28. Identify types of misalignment  
29. List and describe considerations for obtaining proper alignment  
30. Demonstrate how dial indicators are used in alignment  
31. List the typical order of procedures for proper alignment  
32. List and describe methods for shaft alignment  
33. List and define the basic types of maintenance  
34. Describe the basic information required to establish a preventive maintenance system  
35. List and describe some preventive maintenance detection devices

LEARNING/TEACHING TECHNIQUES used in the course are:
- Collaborative Learning  
- Problem Solving  
- Student Presentations  
- Interactive Lectures  
- Creative Projects  
- Individual Coaching  
- Lecture  
- Films/Videos/Slides  
- Demonstrations  
- Other (describe below)  
- Lab

ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:
- Reading  
- Tests  
- Student Presentations  
- Individual Projects  
- Oral Presentations  
- Worksheets  
- Collaborative Projects
Veteran Services: Minnesota West is dedicated to assisting veterans and eligible family members in achieving their educational goals efficiently. Active duty and reserve/guard military members should advise their instructor of all regularly scheduled military appointments and duties that conflict with scheduled course requirements. Instructors will make every effort to work with the student to identify adjusted timelines. If you are a veteran, please contact the Minnesota West Veterans Service Office.

The information in this course outline is subject to revision

To receive reasonable accommodations for a documented disability, please contact the campus Student Services Advisor or campus Disability Coordinator as arrangements must be made in advance. In addition, students are encouraged to notify their instructor.

This document is available in alternative formats to individuals with disabilities by contacting the Student Services Advisor or by calling 800-658-2330 or via your preferred Telecommunications Relay Service.

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Revised 10/1/16